

## Claims

1. Piston machine comprising a rotatably mounted  
cylindrical drum (2), disposed in which is a plurality  
5 of cylindrical bores (3, 4), which are distributed over  
the circumference and in which displaceable pistons (5,  
6) are disposed, wherein the cylindrical bores (3, 4)  
at one side have cylindrical openings (7, 8, 35.1,  
35.2, ... 35.9), which in accordance with the angle of  
10 rotation of the cylindrical drum (2) are temporarily in  
communication in each case with one of two kidney-  
shaped control ports (9, 10), which are connected in  
each case to a working line (27, 28), wherein between  
the kidney-shaped control ports (9, 10) in each case a  
15 switchover region (30, 31) is formed and wherein a  
first end (32) of a pressure compensation line (33)  
opens out at least into one switchover region (30, 31),  
**characterized in**  
that a second end (34) of the pressure compensation  
20 line (33) opens into the outlet-side working line (27),  
wherein the length (L) of the outlet-side working  
line (27) between the outlet-side kidney-shaped control  
port (9) and the second end (34) of the pressure  
compensation line (33) is so dimensioned that there is  
25 a defined phase relationship between a pressure wave,  
which is caused by a reciprocating motion of the  
pistons (5, 6) and advances in the outlet-side working  
line (27), at the point of the second end (34) of the  
pressure compensation line (33) and the angle of  
30 rotation of the cylindrical drum (2).
2. Piston machine according to claim 1,  
**characterized in**

that the piston machine is a hydraulic pump and  
that the length (L) between the outlet-side kidney-  
shaped control port (9) and the second end (34) of the  
pressure compensation line is approximately  $\frac{1}{4} \lambda$ ,

5 wherein  $\lambda$  signifies the wavelength of the pressure  
wave, optionally plus an integral multiple of the  
wavelength ( $\lambda$ ) of the pressure wave.

3. Piston machine according to claim 1,  
10 **characterized in**  
that the piston machine is a hydraulic motor and  
that the length (L) between the outlet-side kidney-  
shaped control port (9) and the second end (34) of the  
pressure compensation line is approximately  $\frac{3}{4} \lambda$ ,  
15 wherein  $\lambda$  signifies the wavelength of the pressure  
wave, optionally plus an integral multiple of the  
wavelength ( $\lambda$ ) of the pressure wave.

4. Piston machine according to claim 1,  
20 **characterized in**  
that the piston machine operates as a hydraulic pump  
and  
that the length (L) of the outlet-side working  
line (27) between the outlet-side kidney-shaped control  
25 port (9) and the second end (34) of the pressure  
compensation line (33) is a fraction of the wavelength  
( $\lambda$ ), wherein the fraction corresponds approximately to  
the quotient of the angle ( $\gamma$ ) between the first end (32)  
of the pressure compensation line (33) and the  
30 cylindrical opening (35.5) of the next cylinder to come  
into overlap with the first end (32) of the pressure  
compensation line (33) at the instant that a pressure

maximum arises in the outlet-side working line (27) and the intermediate angle ( $\delta$ ) between two adjacent cylindrical bores, optionally plus an integral multiple of the wavelength ( $\lambda$ ) of the pressure wave.

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5. Piston machine according to claim 1

**characterized in**

that the piston machine operates as a hydraulic motor and

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that the length (L) of the outlet-side working line (27) between the outlet-side kidney-shaped control port (9) and the second end (34) of the pressure compensation line (33) is a fraction of the wavelength ( $\lambda$ ), wherein the fraction corresponds approximately to

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the quotient of the angle ( $\phi$ ) between the first end (32) of the pressure compensation line (33) and the cylindrical opening (35.2) of the next cylinder to come into overlap with the first end (32) of the pressure compensation line (33) at the instant when a pressure minimum occurs and the intermediate angle ( $\delta$ ) between two adjacent cylindrical bores, optionally plus an integral multiple of the wavelength ( $\lambda$ ) of the pressure wave.

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- 25 6. Piston machine according to one of claims 1 to 5,

**characterized in**

that the length of the pressure compensation line (33) is an integral multiple of the wavelength ( $\lambda$ ) of the pressure wave.

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7. Piston machine according to one of claims 1 to 5,

**characterized in**

that the phase displacement caused by the length of the pressure compensation line (33) at the first end (32) is taken into account by means of a correction of the length (L) between the outlet-side kidney-shaped control port (9) and the second end (34) of the pressure compensation line (33).

8. Piston machine according to one of claims 1 to 7,  
**characterized in**  
that a pressure accumulator element (38) is connected to the pressure compensation line (33).
9. Piston machine according to one of claims 1 to 8,  
**characterized in**  
that a throttling point is formed at the second end (34) of the pressure compensation line (33).